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Cheltenham GL50 1RQ (GB)(54) **Heat radiating device of induction heater.**

(57) The heat radiating device of an induction heater comprises a housing, an air admitting unit 20, and a ventilating unit 50. The housing comprises a bottom housing portion 10 provided at the front end thereof with a plurality of air admitting holes 14, and a receiving portion 30 for receiving saucepans and the like. The air admitting unit 20 is mounted above the air admitting holes 14 and incorporates a fan 24. The ventilating unit 50 is disposed in the upper part of the rear end of the housing and is provided with a

ventilating seat 51 and a horizontal air duct 55 with an outlet 56 whose level is higher than the bottom of the mounting portion of the housing. Cool air is drawn into the device by way of the air admitting holes 14 while hot air is discharged from the device by way of the outlet 56 of the ventilating unit 50. Such a device provides efficient heat radiation whilst preventing spilled cooking liquid from entering the interior of the induction heater.

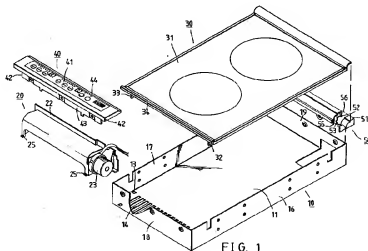


FIG. 1

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FIELD OF THE INVENTION

The present invention relates to a heat radiating device of an induction heater.

BACKGROUND OF THE INVENTION

A desk top induction heater is provided peripherally with a heat radiating device. As a result, the heat generated by the induction heater can be easily radiated. However, an induction cooker is generally housed in a kitchen cabinet, with only the receiving plate and the operation plate being exposed. As a result, the heat radiating device should not be disposed in the side or the bottom of the induction cooker. In addition, if the air exhausting port faces upwards, it is very likely that the spill of the cooking liquid can enter the interior of the induction cooker to cause the breakdown of the component parts of the induction cooker.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a heat radiating device of an induction heater with an air inlet and an air outlet, which are capable of radiating heat effectively and preventing the spill of the cooking liquid from entering the interior of the induction heater.

Another objective of the present invention is to provide a heat radiating device of an induction heater with an air outlet capable of blowing the hot air out through the air outlet.

The foregoing objectives of the present invention are attained by an induction heat, which comprises a body, a heat radiating unit, and a ventilating unit. The body comprises a bottom housing provided at the front end thereof with a plurality of air admitting holes. The heat radiating unit is mounted on the air admitting holes and composed of a fan. The ventilating unit is disposed in the upper portion of the rear end of the body and provided with a ventilating seat having an inverted L-shaped cross section and a horizontal air duct with an outlet whose level is higher than the bottom of the mounting portion of the body. The cool air is drawn in from the air admitting holes while the hot air is let out from the ventilating holes of the ventilating unit.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows an exploded view of a heat radiating device of a first preferred embodiment of the present invention.

FIG. 2 shows a perspective view of the first preferred embodiment of the present invention.

FIG. 3 is a sectional schematic view of the heat radiating device of the first preferred embodiment of the present invention.

FIG. 4 is a schematic view showing the way that the heat is radiated by the heat radiating device of the induction heater housed in a kitchen cabinet, according to the present invention.

FIG. 5 shows an exploded view of a heat radiating device of a second preferred embodiment of the present invention.

FIG. 6 is a schematic view showing the way that the heat is radiated by the heat radiating device of the induction heater housed in a kitchen cabinet, according to a third preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. 1-3, a heat radiating device of an induction heater embodied in the present invention is shown to comprise a bottom housing 10 provided therein with an air admitting and heat radiating unit 20 and provided thereon with a receiving portion 30 which in turn is provided at the front end thereof with a face plate unit 40 having at the rear end thereof an air ventilating unit 50.

The bottom housing 10 of rectangular construction has a bottom plate 11 provided thereon with a plurality of circuit boards 12 and heat radiating pieces 13, as shown in FIG. 3. The bottom plate 11 is provided at the front end thereof with a predetermined number of air admitting holes 14 and retaining holes 13. Mounted on the air admitting holes 14 is the air admitting unit 20.

The air admitting unit 20 is composed of a fan seat 22 and a motor 23 for driving a fan 24 mounted on the fan seat 22 which is provided at the bottom thereof with a predetermined number of tenons 25. The fan 24 is received in a receiving space 26 having an air outlet 28, as shown in FIG. 3.

The receiving portion 30 comprises mainly a rectangular receiving plate 31 of a ceramic or heat-resisting material and having two frame strips 32 and 33 capable of being fastened to the two side plates 16 and 17 of the bottom housing 10 by means of screws (not shown in the drawings.). The face plate unit 40 comprises mainly a plastic housing provided at the top thereof with an operation face plate 41 having a plurality of operating keys and further provided at the front thereof with a front frame 42 for fitting into the upper edge of the bottom housing 10. The face plate unit 40 is further provided with a retaining plate 43 extending downwards from the bottom thereof. The retaining plate 43 is engageable securely with a front end plate 18 of the bottom housing 10.

The air ventilating unit 50 is located behind the receiving portion 30 and composed of a ventilating seat 51 and a horizontal frame 52 engageable with a rear end plate 19 of the bottom housing 10. The ventilating seat 51 has an inverted L-shaped air duct 55 with an air ventilating hole 56 located above the bottom housing 10 and facing horizontally the back of the heater to prevent the entry of a foreign object or the liquid into the inside of the heater.

In combination, the tenons 25 of the fan seat 22 of the heat radiating unit 20 engage respectively with the retaining holes 13 of the bottom plate 11. The fan 24 is aligned with the air admitting hole 14. The face plate unit 40 is fastened over the heat radiating unit 20 such that the front horizontal frame 42 engages the inner edge of the front end plate 18 of the bottom housing 10. The front edge 34 of the receiving portion engages the rear edge 44 of the face plate 41. The ventilating seat 51 has an insertion frame 53 engaging the rear end plate 19 of the bottom housing 10 such that the receiving portion 30, the face plate unit 40 and the ventilating seat 51 is fastened to the bottom housing 10.

As shown in FIGS. 3 and 4, the heat radiating device of the induction heater is mounted at the top portion of a kitchen cabinet 60. In operation, the air is let in via the inlets 61 and 62. The air is the blown by the fan 24 to enter the interior of the heater via the air admitting holes 14 and the air outlet 28, as indicated by the arrows in the drawings. The air is then let out via the ventilating hole 56 of the ventilating seat 51.

As shown in FIG. 5, another preferred embodiment of the present invention is similar in construction to the first preferred embodiment of the present invention described above, with the difference being that the air admitting unit 70 is provided with a square fan 71 fastened to the air admitting holes 14. The air outlet 72 of the fan 71 faces the interior of the heater for radiating the heat. The fan 71 is different in structure from the fan 24 of the first preferred embodiment and can be made and installed easily.

Now referring to FIG. 6, the third preferred embodiment of the present invention is shown to comprise a housing 10, a receiving portion 30 and a ventilating seat 51 and is intended for use in conjunction with an oven. As shown in FIG. 6, a kitchen cabinet 60 is provided with an oven 64. A fan 80 is set up at the rear end of the bottom housing 10. In other words, the fan 80 is located at the end contiguous to the ventilating seat 51, which is provided horizontally with a ventilating hole 56. The fan 80 has an air inlet 81 in communication with the ventilating hole 56. The fan 80 further has an air outlet 82 facing a heat radiating plate 13. The bottom plate 11 is provided with two heat-

radiating holes 83 and 84. In operation, the air which is sucked in via the ventilating hole 56 of the ventilating seat 51 by the fan is blown toward the heat-radiating plate 13 before entering the kitchen cabinet 60 via the heat-radiating holes 83 and 84. The air is then let out via another heat-radiating holes 85 and 86.

As described above, the three preferred embodiments of the present invention are provided respectively with a ventilating seat 51 having a ventilating hole 56 located horizontally at a level slightly higher than the surface of the kitchen cabinet. In other words, the air is admitted and exhausted in a horizontal direction, thereby preventing the entry of the overflowing liquid into the inside of the heater.

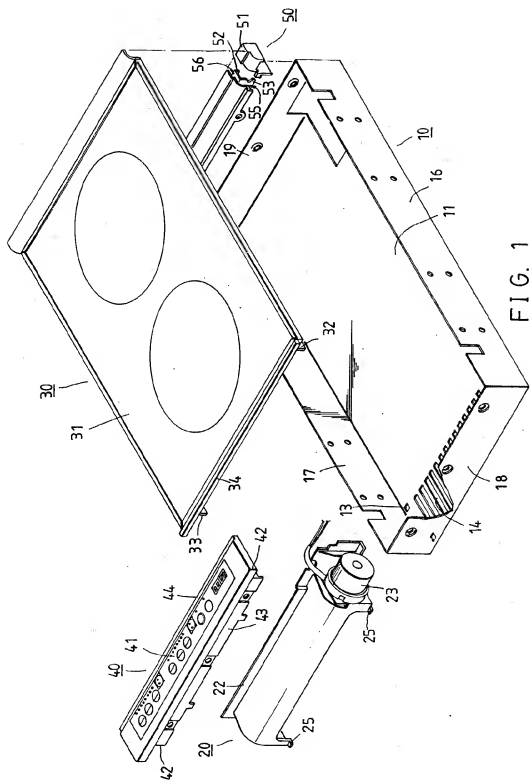
The embodiments of the present invention described above are to be regarded in all respects as merely illustrative and not restrictive. Accordingly, the present invention may be embodied in other specific forms without deviating from the spirit thereof. The present invention is therefore to be limited only by the scope of the following appended claims.

Claims

1. A heat radiating device of an induction heater comprising:
 - a bottom housing provided at one end of a bottom thereof with a plurality of air admitting holes;
 - an air admitting unit disposed in said bottom housing and provided with at least one fan having a wind inlet aligned with said air admitting holes and having a wind outlet facing the interior of an induction heater;
 - a receiving portion located in an upper portion of said bottom housing and provided with a receiving plate for covering a top edge of said bottom housing, said receiving portion further provided at one end thereof with a face plate unit and at another end thereof with an air ventilating unit having a ventilating seat which is provided with a rear horizontal frame having therein a ventilating duct with an air admitting hole located at the bottom thereof and in communication with said interior of said induction heater, said rear horizontal frame further having a horizontal exhausting port located over a rear end plate of said bottom housing.
2. The heat radiating device of claim 1 wherein said ventilating seat supports on one side thereof said receiving portion and has on another side thereof a rear horizontal frame engageable with said rear end plate, said seat having a ventilating hole having an inverted L-

shaped cross section, said ventilating hole having an outlet located at the rear upper edge of said bottom housing.

3. The heat radiating device of claim 1 wherein said air admitting unit has an air admitting seat provided at the bottom thereof with a predetermined number of tenons extending downwards and engageable with retaining holes of a bottom plate of said bottom housing. 5 10
4. The heat radiating device of claim 3 wherein said air admitting seat of said air admitting unit is of a long striplike construction and provided with a receiving space for mounting therein a cylindrical fan having at the bottom thereof a wind inlet aligned with an air admitting hole of said bottom plate of said bottom housing, said cylindrical fan further having a wind outlet facing said interior of said heater. 15 20
5. A heat radiating device of an induction heater comprising:
- a bottom housing provided thereon with a receiving portion and having a bottom plate provided with a plurality of heat-radiating holes; 25
 - a fan disposed at a rear end of said bottom housing; and
 - a ventilating seat of a hollow construction and located over said rear end of said bottom housing, said ventilating seat having therein a horizontally disposed air duct over which a horizontally oriented ventilating hole is located such that said ventilating hole is in communication with an air inlet of said fan and that air sucked in by said fan is blown through said ventilating hole toward the interior of an induction heater before said air is let out via said heat-radiating holes of said bottom plate. 30 35 40
- 45
- 50
- 55



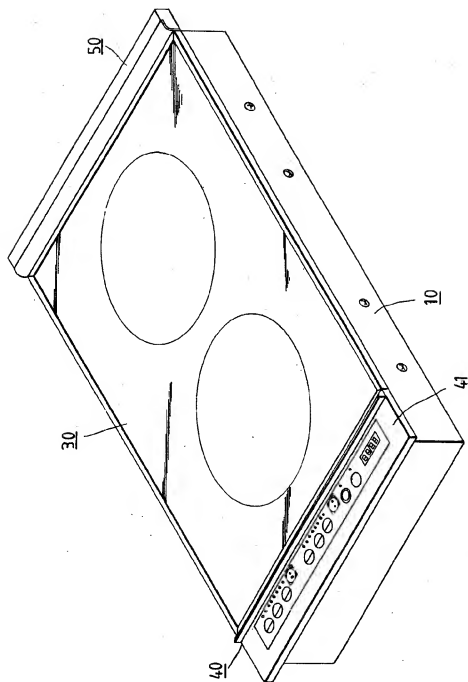
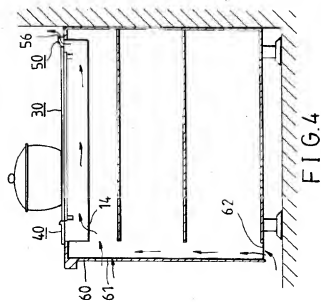
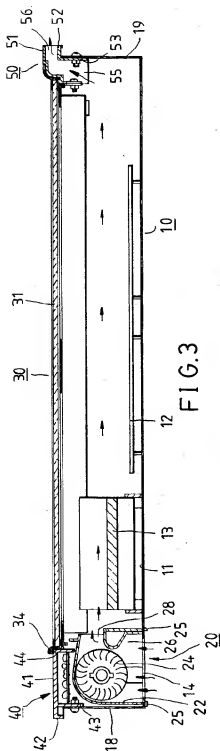
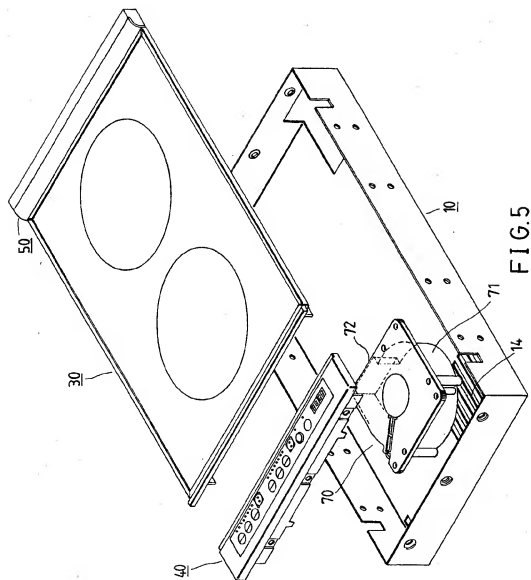


FIG. 2





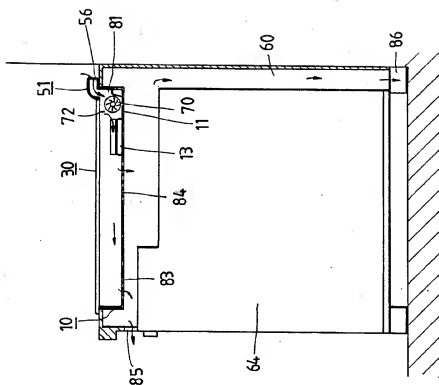


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 94 10 5115

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 067 235 (MATSUSHITA ELECTRIC INDUSTRIAL CO. LTD.) * claim 1 *	1	H05B6/12 F24C15/10
A	PATENT ABSTRACTS OF JAPAN vol. 14, no. 546 (E-1008) 4 December 1990 & JP-A-02 234 384 (MATSUSHITA ELECTRIC IND. CO.) 17 September 1990 * abstract *	1	
A	EP-A-0 561 219 (E.G.O. ELEKTRO-GERATE BLANC U. FISCHER) * column 5, line 11 - line 23 *	1	
A	US-A-4 415 788 (JENN-AIR CORP.) * claim 1 *	1	
A	FR-A-2 340 513 (OREGA "ELECTRONIQUE ET MECANIQUE")		
A	EP-A-0 376 791 (CIE. EUROPEENNE POUR L'EQUIPEMENT MENAGER "CEPEM") -----		TECHNICAL FIELDS SEARCHED (Int.Cl.6) H05B F24C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 August 1994	Examiner De Snet, F
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure F : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPF FORM 1500 (04/92) (P/0401)